



Passage VII

Glaciers deposit *till* (a poorly sorted sediment). If glaciers repeatedly advance over an area and then melt back, thick till deposits may form. Figure 1 shows a vertical core taken through layers of till, non-glacial sediments, and bedrock at a site in Canada. The *resistivity* (an electrical property of a material) and CO₂ measurements taken along the core are also shown. Resistivity is related to a sediment's particle sizes, compaction, and mineral composition. Table 1 shows the average percent sand, silt, and clay contents and descriptions of the various till layers.

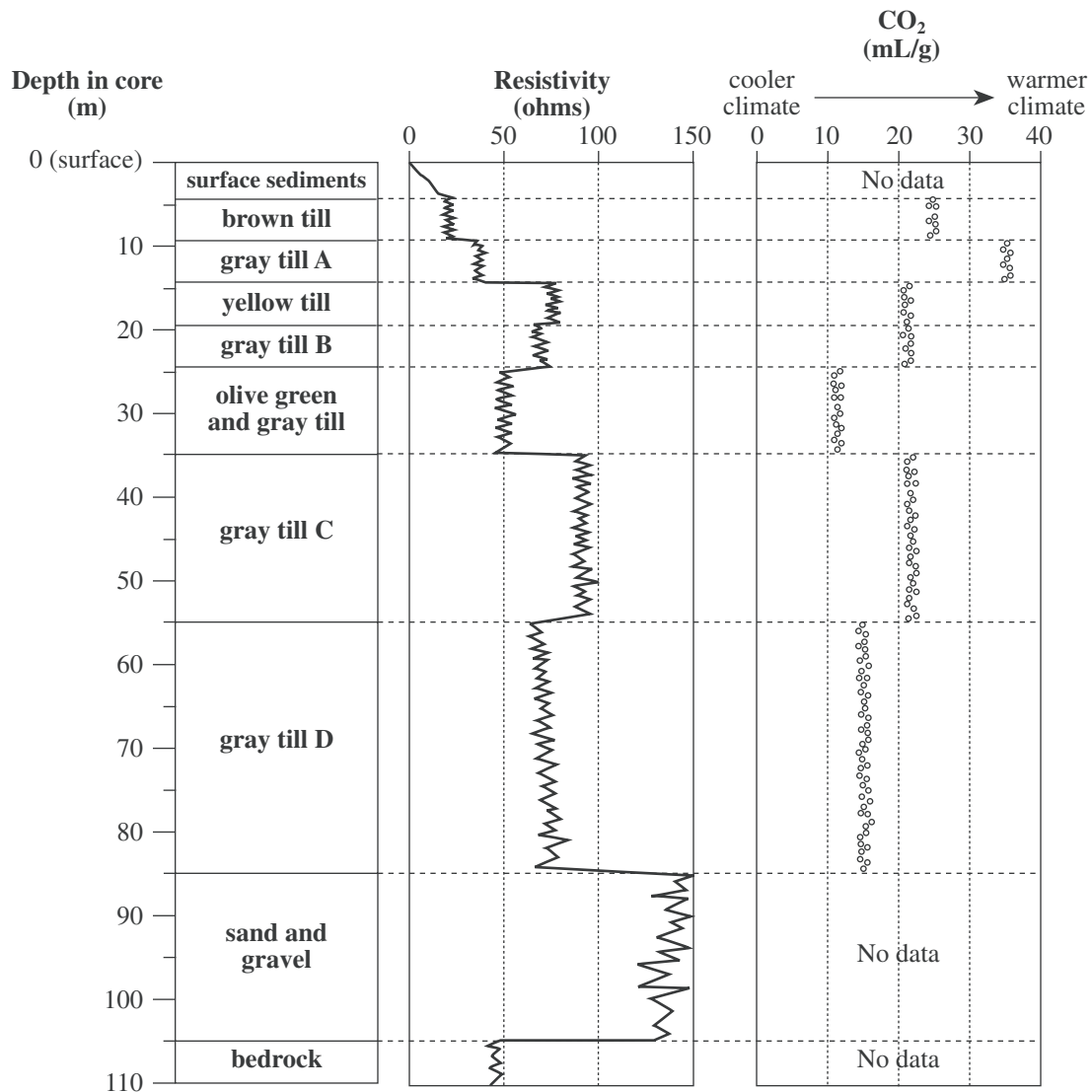


Figure 1



Table 1				
Depth of till layer (m)	Description of till	Average percent by volume of:		
		larger particle → smaller particle		
		sand	silt	clay
4–9	brown (oxidized*)	54.1	31.7	14.2
9–14	gray A	44.8	36.6	18.6
14–19	yellow (oxidized)	43.5	31.7	24.8
19–24	gray B	37.4	34.3	28.3
24–35	olive green and gray	25.5	34.3	40.2
35–55	gray C	31.7	33.6	34.7
55–85	gray D	37.5	31.7	30.8

*Oxidized sediments have at some time been exposed to the air. Sediments that have been *deprived* of oxygen will be gray or green.

Figure 1 and Table 1 adapted from E. A. Christiansen, "Pleistocene Stratigraphy of the Saskatoon Area, Saskatchewan, Canada: An Update." ©1992 by the Geological Association of Canada.

36. A sample of gray till was recovered from another core taken from a nearby area. The table below shows the results of an analysis of the sample.

Percent by volume of:			Resistivity (ohms)	CO ₂ content (mL/g)
sand	silt	clay		
31.5	33.7	34.8	85	22

Based on these data and the data provided in Figure 1 and Table 1, the sample of gray till corresponds most closely with which till from Figure 1 ?

- F. Gray till A
G. Gray till B
H. Gray till C
J. Gray till D
37. According to Figure 1, the *oldest* glacial advance in this area deposited which of the following till layers?
A. Gray till A
B. Yellow till
C. Olive green and gray till
D. Gray till D
38. According to Figure 1, which of the following statements best describes how the resistivity of the sand and gravel layer compares to the resistivity of the till layers? The resistivity measured in the sand and gravel layer is:
F. lower than the resistivities measured in any of the till layers.
G. higher than the resistivities measured in any of the till layers.
H. the same as the resistivities measured in the surface sediments.
J. lower than the resistivities measured in the bedrock.
39. The average resistivity of the bedrock in the core is most similar to the average resistivity of which of the following till layers?
A. Yellow till
B. Gray till B
C. Olive green and gray till
D. Gray till C
40. The sediments being deposited at the present time at the site where the core was taken have a much higher CO₂ content than any of the tills. Given this information and the information in Figure 1, the CO₂ content of sediments recently deposited at the site would most likely be in which of the following ranges?
F. Less than 10 mL/g
G. Between 10 mL/g and 25 mL/g
H. Between 25 mL/g and 35 mL/g
J. Greater than 35 mL/g

END OF TEST 4

STOP! DO NOT RETURN TO ANY OTHER TEST.

[See Note on page 56.]